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SENATE

REPORT
101-108

DEPARTMENT OF ENERGY NATIONAL LABORATORY COOPERATIVE RESEARCH AND TECHNOLOGY COMPETITIVENESS ACT OF 1989

AUGUST 4 (legislative day, JANUARY 3), 1989.—Ordered to be printed

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Mr. JOHNSTON, from the Committee on Energy and Natural Resources, submitted the following

REPORT

[To accompany S. 550]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 550) to establish a national program to improve collaboration between the national laboratory system of the Department of Energy and the private sector so as to foster the development of technologies in areas of significant economic potential in order to enhance the Nation's economic competitiveness and strategic well-being, and for other purposes, having considered the same, reports favorably thereon with an amendment and recommends that the bill, as amended, do pass.

PURPOSE OF THE MEASURE

The purposes of S. 550, as ordered reported, are to—

Authorize the director of the national laboratories of the Department of Energy to enter into cooperative agreements providing for the use by the private sector of technology developed under the agreements;

Provide national organization and coordination in the research, development and commercialization of high-temperature superconductors; and

Ensure the full use of the results of investment in the research and development carried out by the national laboratories in meeting international competition.

29-010

S313-23.

Background and Need

BACKGROUND ON SUBTITLES A AND C

The U.S. Government and the private sector together spend over $100 billion annually on research and development (R&D). Over one-third of the Government-sponsored R&D is carried out in Government laboratories, such as the facilities of the Department of Energy. The Federal contribution to research and development is a major investment by the taxpayer. Last year the United States spent more on R&D than the next four Western industrialized countries (Japan, West Germany, France and the United Kingdom) combined.

Over the past decade the U.S. R&D effort has grown, but the composition of the activities of DOE has shifted substantially toward defense-related research. While this has increased the ratio of U.S. R&D expenditures to gross national product to levels similar to that of Japan and West Germany, the civilian proportion of R&D is much higher in those countries. In the United States the defense portion of R&D is much higher than the civilian portion.

This shift in the United States to emphasize defense R&D has provided varying degrees of benefit. More importantly, because of the increase in the proportion of R&D taking place within the defense complex, defense R&D activities have taken on new importance to the management of technology transfer from defense-related laboratories to the marketplace.

Over the years, Government-sponsored R&D has produced technologies with important, commercially-valuable civilian applications not necessarily related to the original mission of the research. This is particularly true of civilian and defense R&D programs carried out at the DOE national laboratories.

Prior to 1980, little effort was made to transfer into commercial application of federally-funded R&D at the Department of Energy national laboratories. Encouraging the commercial application of technology developed at these laboratories was seen as a subordinate mission to the defense mission assigned to the laboratories by Congress. In the case of the DOE laboratories assigned defense-related missions, technology transfer was often seen as an activity whose risks significantly outweighed its potential rewards.

In recent years, however, concern over U.S. competitiveness in global markets has moved Congress to strengthen the links between the Federal R&D base and U.S. manufacturing industry. Congress has acted to improve the process of technology transfer from Government laboratories to U.S. private industry by decentralizing technology management responsibilities. The Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96–480) and the Patent and Trademark Amendments of 1980 (P.L. 96–517) were key legislative efforts in this process.

The Stevenson-Wydler Act took a first step to improve the utilization of federally-funded research by directing each Government laboratory to establish a special office to disseminate information about products, processes, and services developed at the laboratories. Similarly, prior to 1980, the Federal Government generally retained title to all inventions resulting from federally-funded R&D,

although these rights could be waived under certain circumstances. By comparison, the Patent and Trademark Amendments of 1980 (Bayh-Dole) encouraged Federal agencies to grant exclusive and partially-exclusive licenses to technologies developed at Government laboratories. However under Bayh-Dole, the Federal Government always retained a royalty-free license to such inventions.

As the next step, the Federal Technology Transfer Act of 1986 (P.L. 99–502) amended the Stevenson-Wydler Act to allow Federal agencies to permit their laboratories to collaborate with industry on research and development through cooperative R&D agreements.

Then in April 1987, the President issued Executive Order 12591, "Facilitating Access to Science and Technology." The order implemented the Federal Technology Transfer Act by directing Government laboratories to enter into cooperative R&D agreements and to license, assign, or waive rights to intellectual property.

Despite these efforts to reform technology management within all federally-funded laboratories, these laws have not resulted in a uniform policy for technology transfer from DOE laboratories. Under current law, different rules apply to different types of DOE national laboratories. For example, DOE laboratories operated by universities are generally authorized to retain title to almost all inventions that they make. Conversely, DOE research laboratories operated by for-profit contractors are not covered by the statutes discussed above, and it is unclear whether they are covered by the President's Executive Order.

Moreover, DOE's contractor-operated laboratories that are primarily dedicated to Naval nuclear propulsion or weapons related research are specifically precluded from taking title to inventions they make, unless they obtain a special waiver from the Department of Energy. This process takes any where from 3 months to several years. The uncertainty in the process is a significant bar to technology transfer from these laboratories.

NEED FOR SUBTITLES A AND C

Many Federal agencies, including the Department of Defense, participate in successful technology transfer programs. These programs have been strengthened substantially by the statutes enacted by Congress. However, the Department of Energy's defense laboratories, which receive the significant share of the Department's research and development budget, have not had commensurate success in technology transfer. The statutes that spurred the development of technology transfer elsewhere in the Federal Government have not been applied to the Department's defense laboratories. In fact, in previous years there has been substantial opposition within DOE to such an application of these laws. For decades the Department of Energy encouraged warehousing critical technologies instead of promoting their commercialization.

The Committee is encouraged by the commitment the new Secretary of Energy has made to change the culture of the DOE defense laboratories in the area of technology transfer. In response, more industries have expressed interest in conducting cooperative research with the scientists at these laboratories.

Under current law, there is a conflict between the organic statutes of the Department of Energy (the Atomic Energy Act, as amended and the Federal Nonnuclear Energy Research and Development Policy Act of 1974) and the technology transfer statutes discussed above. However, this legislation attempts to reconcile the technology transfer provisions of these statutes without interfering with the national security missions of the Department's defense laboratories.

Inventions developed by DOE with Federal support constitute a valuable national resource. With appropriate management and incentives many of these inventions could be further developed into commercial products by the private sector without any adverse consequences for national security whatsoever. The new products and processes that would result could significantly enhance the competitiveness of domestic industry in international trade.

However, historically the technology developed at the Department's defense laboratories has been centrally managed. Management of this technology at DOE headquarters is subject to the same heavy hand whether the technology is sensitive or not. Such management is far removed from the laboratory contractors themselves, who are in the best position to judge the commercial potential of the technology they develop.

This centralized control has been relaxed for certain of the Department's non-defense laboratories. At these laboratories, the management contractor is permitted to elect title to some innovations, inventions, and intellectual property created during the course of work at the laboratory. However, at the Department's defense laboratories all such titles are retained by DOE.

Contractors at the defense laboratories may attempt to negotiate title to inventions and other intellectual property with the Department. They also may seek to enter into cooperative research agreements with private industry. However, in such an instance, a contractor must go through a cumbersome approval process with the Department. Rather than encourage commercial development of inventions with significant potential, the process tends to discourage cooperative work and stall the transfer of technology. As a consequence of this centralized control, the perception in private industry is that cooperative R&D with the Department at the defense laboratories, is too slow, too tedious, too uncertain and, totally unrewarding.

Consequently, numerous companies have been frustrated in their attempts to use the current DOE technology transfer system. Some have lost interest; some have lost their financial backing because of delay. But many more, aware of the process, have never even tried to become involved.

The problem faced is twofold: first, attracting industries and universities to take advantage of the scientific expertise and technology of the national laboratories; and second, eliminating the red tape and delays private companies face when doing business with the national laboratories.

The key to improving relationships with private industry is the way in which rights to ownership of inventions and intellectual property are assigned at DOE. At most federally-supported laboratories—for example, at the National Institutes of Health and De-

partment of Defense laboratories—ownership rights to inventions and intellectual property may be assigned through a predictable, timely process to the contractor at the laboratory responsible for the innovation. Experience has shown that, in most instances, providing timely grant of title to inventions made with Federal support is the best incentive to attract the risk capital necessary to develop these innovations.

This legislation extends that approach to the Department's national laboratories.

Such an approach maximizes the technology transfer potential of innovations, because the scientists most familiar with the advantages, disadvantages, and possibilities of the innovation are directly responsible for negotiating the terms under which it is commercialized.

Decentralized technology management is particularly important for innovations created by laboratories working cooperatively with private businesses. Often the commercial viability of technological innovations have a very sensitive dependence on timing. Laboratory contractors need the flexibility to negotiate contracts with private industry that allow timely action if technology transfer is to be successful.

The Department's Energy Research Advisory Board (ERAB) has emphasized this point in several studies on the laboratory-industry relationship. Among the key recommendations made by the 1982, 1985, and 1988 ERAB reports, are the following:

DOE laboratories should do more reimbursable work with industry;

DOE laboratories should have more flexibility to enter into cooperative agreements;

DOE management of intellectual property should be decentralized;

DOE should encourage personnel exchanges with industrial firms;

There is a need for clarification as to the importance of technology transfer as an inherent priority in all the DOE programs;

DOE laboratories should be able to enter into agreements with industry without cumbersome DOE authorization processes;

Cooperative research programs focused on an industrial sector are an effective method of improving relations with U.S. industry in order to break down barriers to cooperation, and industry guidance should be used early in the planning stages of these activities:

Laboratory scientists rarely visit industrial laboratories, so that personnel exchanges are very important;

While technology transfer can and should be encouraged to fulfill the potential of the laboratories, the scientific and defense contributions and the quality of the laboratories must be maintained.

Intellectual property rights procedures must be continuously improved, with greater delegation of authority to laboratory management to dispose of those rights.

A March 1988 report by the General Accounting Office cited similar constraints to technology transfer at the Federal laboratories. These included:

Public dissemination of computer software, eliminating incentives for marketing such products;

Dissemination of proprietary research results, making private business less inclined to enter into collaborative research and development agreements;

Uncertainty and delay in gaining title to inventions at DOE laboratories due to the cumbersome waiver request process; and

Unnecessarily complex approval procedures.

This legislation is intended respond to these persistent recommendations and, thereby, to assist domestic industry to more completely and appropriately benefit from the research dollars spent at the Department's national laboratories. By making needed improvements in the technology management activities at these laboratories, this legislation will greatly enhance the value to the nation of federally-supported research and development.

BACKGROUND AND NEED FOR SUBTITLE B

Research seeking new superconducting materials could facilitate access to vast new energy resources as well as greatly reduce costs for applications of superconductivity in fusion; electrical energy generation, storage, and transmission; train and ship transmission; electronics; and medicine.

Exciting advances are being made in the discovery of materials that exhibit superconducting properties at high temperatures. This research, which is already the basis of industries in electronic and medical applications worth $400 million annually, has produced greater advances in superconductivity during the last 3 years than has been obtained in the past 75 years. The recent discoveries will eventually permit substantial improvements, including especially cost reductions, in many of the existing superconducting technology applications.

Since the initial discoveries of new superconducting materials, the Federal investment in research has been very significant. In fiscal year 1988 superconductivity research funding levels by all Federal agencies doubled to $95 million, and Congress appropriated approximately $135 million for high-temperature superconductivity research in fiscal year 1989.

The Department of Energy has been a major participant in this research. Several DOE laboratories have strong foundations in superconductivity, based upon years of work on magnets for research high-energy physics, magnetic fusion, and electric power transmission. A number of DOE national laboratories are exceptionally well equipped to create and test new high-temperature-superconducting materials.

Last year Congress passed the National Superconductivity and Competitiveness Act of 1988 (P.L. 100–697), which established a 5-year national action plan for research in high-temperature superconducting materials. This measure directed the Office of Science and Technology Policy to establish goals and priorities for federal-

ly-funded research and development. S. 550 would complement this effort.

DOE national laboratories have launched substantial research efforts: efforts comparable to the investment of private industry. However, much needs to be done to assure that domestic industry can captialize upon this research. The Federal Government needs to do much more to improve coordination of research efforts and the transfer of new technologies to the marketplace. If successful so that domestic industry will be able to more effectively compete against a committed effort by other nations, most notably the Japanese.

Subtitle B brings focus and coordination to the development of superconductivity research at the DOE national laboratories. This legislation requires the Secretary of Energy to carry out a cooperative research initiative in superconductivity, bringing the national laboratories together with universities and private domestic firms to develop "enabling" technologies for high-temperature superconductivity.

Legislative History

Senator Domenici introduced S. 550 on March 8, 1989, for himself and Senators Bingaman, McClure, Murkowski and Garn. No hearings were held on the bill in the 101st Congress. However, legislation very similar to S. 550 was considered by the Senate in the 100th Congress.

In the 100th Congress, S. 1480 was introducted by Senator Domenici on July 10, 1987. Hearings were held by the Subcommittee on Research and Development on September 15 and 17, 1987, and on May 11, 1988. Subsequently, S. 1480 was reported by the Committee on September 23, 1988 (S. Rept. 100–524). The provisions of S. 1480 were passed by the Senate twice as part of more comprehensive measures (H.R. 3048 and H.R. 4505).

At its business meeting on July 19, 1989, the Committee on Energy and Natural Resources considered S. 550, adopted an amendment in the nature of a substitute, and ordered the resulting bill favorably reported to the Senate.

Committee Recommendation and Tabulation of Votes

The Committee on Energy and Natural Resources, in open business session on August 11, 1988, by unanimous vote of a quorum present, recommends that the Senate pass S.550, if amended as described herein. The rollcall vote on reporting the measure was 18 yeas, 0 nays as follows:

YEAS

NAYS

Mr. Johnston
Mr. Bumpers
Mr. Ford*
Mr. Metzenbaum*
Mr. Bradley
Mr. Bingaman*
Mr. Wirth

Mr. Conrad
Mr. Heflin
Mr. McClure
Mr. Hatfield
Mr. Domenici
Mr. Wallop*
Mr. Murkowski
Mr. Nickles
Mr. Burns
Mr. Garn*
Mr. McConnell*

* Indicates voted by proxy.

Committee Amendment

During consideration of S. 550, the Committee adopted an amendment in the nature of a substitute to the bill. The Committee then ordered the bill favorably reported to the Senate. The principal changes in S. 550 as introduced are described below. (Additional details on the provisions of the bill as ordered reported are contained in the Section-By-Section Analysis portion of this report.)

The amendment in the nature of a substitute makes only minor changes in the bill as introduced. Among the technical changes in the substitute are the addition of a table of contents, and centralizing authority in the Secretary.

A requirement that the Secretary fund specific projects in high-temperature superconductivity was deleted because the Committee feels that such a requirement is unnecessary.

The provisions governing the liability of the United States were modified at the suggestion of the Department of Justice, as set forth in the Executive Communications section of this report.

Section-by-Section Analysis

Section 1. Short title

This section provides the short title of the bill, the "Department of Energy National Laboratory Cooperative Research and Technology Competitiveness Act of 1989".

Section 2. Table of contents

This section contains a table of contents for the bill.

Section 3. Definitions

This section contains the definitions of the terms used in the Act as a whole, including a listing of the national laboratories of the Department of Energy that are subject to the bill. Section 3 specifically provides that the Naval Nuclear Propulsion Reactor Laboratories, and their contractors or subcontractors performing work covered by Executive Order 12344, are not subject to the bill.

Section 4. Findings

This section contains the findings for the bill.

Section 5. Purposes

This section contains the purposes of the bill.

Section 6. Direction

This section directs the Secretary to take actions necessary to further the mission of transfer of technology to the private sector. The measure expressly states that this mission is to be carried out in a manner that is not detrimental to the military mission of any laboratory.

SUBTITLE A—NATIONAL LABORATORY CENTERS FOR TECHNOLOGY MANAGEMENT

Section 101. Policy

This section contains the policy for the act, including that intellectual property rights in technology developed at national laboratories be managed so as to promote the competitiveness of United States industries.

Section 102. Cooperative research and development agreements

This section describes the relationship between the Secretary of Energy and the directors of the national laboratories in carrying out cooperative research with the private sector, the universities and other persons.

Subsection (a) requires the Secretary to prescribe regulations to ensure that contracts for operation of a national laboratory authorizes the director to enter into cooperative research and development agreements and to negotiate intellectual property licensing agreements for inventions, technical data, or computer software owned, assigned, or licensed to the laboratory.

Subsection (b) authorizes a director of a national laboratory to include provisions in any cooperative research and development agreement permitting the laboratory manager or operator to accept funds, personnel, services, and property from collaborating parties, to grant or agree to grant in advance to a collaborating party intellectual property rights, and, to the extent consistent with Department of Energy conflict-of-interest policies, allow an employee of a laboratory manager or operator to participate in efforts to transfer intellectual property rights developed by the employee while in the service of the manager or operator.

Section 103. Criteria for entering into agreements

This section requires the director of a national laboratory before entering into a cooperative research and development agreement to determine that facilities of the laboratory are available for work under the agreement, that the work would not interfere with the conduct of Department of Energy programs and would not create a future detrimental burden on the laboratory. The primary mission of the DOE nuclear weapons complex remains nuclear weapons research, design, development, production, testing, and maintenance. In addition, the proposed agreement must be consistent with the applicable guidelines of the Secretary for such agreements.

Section 104. Agreement considerations

This section requires the director of a laboratory to give special consideration to small businesses and preference to domestic businesses and consortia in deciding which cooperative agreements to enter into. The section also requires the director to take into consideration policies of reciprocity, if any, when foreign companies are involved in a proposed agreement. In addition, the director must afford an opportunity for universities to participate where appropriate.

Section 105. Modification or disapproval of agreement

This section authorizes the Secretary of Energy to disapprove or require modification of a proposed cooperative agreement within 30 days after it is submitted to him. In any case that the Secretary disapproves or requires modification of a proposed agreement, the Secretary must transmit a written explanation of his action within the same 30 days. If no action is taken by the Secretary in 30 days the proposed agreement shall be deemed approved.

Section 106. Limitation

This section limits the cumulative total of non-appropriated funds received in any year under all cooperative agreements entered into by the director of a laboratory to 10 percent of the laboratory's annual budget. However, this limitation may be exceeded if the Secretary approves in advance.

Section 107. Conflicts of interest

This section places a requirement on the director of a laboratory to discourage conflicts of interest when entering into cooperative agreements, granting licenses, or assigning of rights to intellectual property. The director may not negotiate a cooperative agreement with, or assign intellectual property under this Act to, a related person or a related entity unless the Secretary approves in advance. No such agreement or assignment can become effective unless approved by the Secretary.

For purposes of this section, a related person is a person related by blood or marriage to the director, and may be other persons as determined by the Secretary. A related entity is a parent corporation, a subsidiary, or affiliate or any other entity that has a financial relationship to the laboratory manager or operator.

Section 106. Records of agreements

This section requires the director of each national laboratory to maintain a record of all cooperative agreements under this Act and submit a copy of this record to the Secretary annually.

Section 107. Duties and responsibilities of the Secretary

This section requires the Secretary of Energy to carry out several reviews and to implement policies based on these reviews.

Subsection (a) requires the Secretary to review regulations, policies, procedures, and administrative processes affecting the ability of national laboratory directors to carry out cooperative research with private industry or with universities.

Subsection (b) requires the Secretary to review existing standards for potential conflicts of interest to ensure that guidelines under the Act are adequate for situations that are likely to arise.

Subsection (c) requires the Secretary to review the impact of the exchange of scientific information, scientific innovation, and commercialization resulting from cooperative research and development agreements and to conduct a survey of non-Federal parties to determine if adequate measures exist to encourage scientific innovation and commercialization resulting from these agreements. Policy recommendations that are based on this study would be submitted to Congress.

The Secretary must develop guidelines based on the review under this subsection. The Secretary must also report to Congress and the President within 90 days after the enactment of the Act on the review and implement the guidelines within 180 days after such enactment.

Section 110. Personnel exchanges

This section authorizes the Secretary to provide in cooperative agreements for temporary exchanges of personnel between domestic firms or universities and the laboratories.

Section 111. Other Department of Energy resources

This section authorizes the Secretary to make available resources of the Department of Energy to participants in a cooperative agreement. Facilities of the Department may be made available by the Secretary on a reimbursable basis.

Section 112. Avoidance of duplication.

This section requires the Secretary to ensure unnecessarily duplicative research is not performed at research facilities of the Department of Energy.

SUBTITLE B—CRITICAL TECHNOLOGY CENTERS

Section 121. Findings

This section contains the findings for the subtitle, including a finding that the Department of Energy national laboratories have demonstrated expertise in high-termperature superconductivity research and have a proven record in research in enabling technologies to benefit industrial-sector efforts in commercialization.

Section 122. Purposes

This section contains the purposes for the subtitle, which includes establishment of a national organization and coordination in the research, development, and commercialization of high-temperature superconductors.

Section 123. Establishment of high-temperature superconductor research initiative

This section requires the Secretary of Energy to carry out an "Initiative" on enabling technology for high-temperature superconductivity and on practical applications of high-temperature superconductor technology.

Section 124. Council for Enabling Technologies

This section requires the Secretary to form a "Council on Research on Enabling Technologies" to advise the Secretary in setting goals and strategies for the Initiative. The Council would set guidelines for the release of technical findings and developments under the Initiative. These guidelines must be consistent with any guidelines for release of such information set forth by Federal agencies affected by the guidelines. The Council would also recommend measures to ensure that unnecessarily duplicative research is not carried out under the Initiative.

Section 125. Centers for research on enabling technologies

This section requires the Secretary of Energy to establish cooperative research centers for enabling technologies for high-temperature superconductivity at national laboratories.

Section 126. Participation by the national laboratories

This section provides for the participation of national laboratories in the Initiative and requires the Secretary to take certain actions to ensure such participation consistent with the purposes of this Act.

SUBTITLE C—GENERAL PROVISIONS

Section 131. Authority of the Secretary

This section provides that nothing in the Act affects or limits the authority of the Secretary of Energy to control all classified or sensitive research contracts to which the Department or a national laboratory is a party. In addition, nothing in the subtitle affects the vesting of title in the Department of all intellectual property that is made under classified or sensitive research (as such terms are defined in section 148 of the Atomic Energy Act).

Section 132. Regulations

This section requires the Secretary to prescribe regulations implementing sections 102, 103, and 104 within 180 days after the date of enactment. Before the Secretary issues regulations, the Secretary must consult with the Office of Federal Procurement Policy.

Section 133. Patent ownership and the conditions of ownership

Section 133(a) requires the Secretary of Energy to dispose of the title to any invention made under a contract with a national laboratory in the same manner as if the applicant were a small business or a nonprofit organization under Chapter 18 of title 35, United States Code.

Subsection (b) provides that whenever the Secretary determines to retain title to an invention made at a national laboratory because of exceptional circumstances under section 202(a)(ii) of title 35, United States Code or because the invention is made under a funding agreement described in section 202(a)(iv) of title 35, title to the invention shall be retained by the Government unless the national laboratory in question requests the title. The title remains with the national laboratory if the laboratory requests the title and the Secretary does not notify the director of the laboratory—

(a) within 90 days after receipt of the request that the invention is covered by sections 202(a) (ii) or (iv); or

(b) within 150 days after receipt of such request that the invention has been designated sensitive technical information.

Title to inventions that arise outside the scope of a cooperative agreement under this Act remain with the Federal Government unless the director of a laboratory applies for and receives a waiver under the law.

This subsection also provides that the Secretary may not use export control statutes as the sole basis for refusing to request title to an invention first conceived and reduced to practice under a cooperative agreement with a national laboratory.

Finally, if the Secretary does not notify the director of the laboratory that has requested title to an invention in accordance with this section, the laboratory will have deemed to have elected title to the invention.

Subsection (c) provides that the Secretary may exempt from the operation of subsection (b) any category of inventions that he determines is directly related to nuclear weapons.

Section 134. Intellectual property

This section contains provisions governing the treatment of intellectual property in contracts between the Department of Energy and national laboratories. Such treatment does not confer in the Secretary any new authority or requirements with respect to the disclosure of intellectual property. Rather, the provison is intended to require procedures for the management of intellectual property.

Subsection (a) requires any contract with a national laboratory to contain provisions as follows:

1. The laboratory owns intellectual property made by its employees;

2. The contract must restrict the use of any royalties or income earned by the manager or operator of a national laboratory to uses authorized under existing law; and

3. The costs of obtaining and protecting intellectual property rights owned by the laboratory must be paid for by the laboratory.

Subsection (b) provides that all intellectual property of a laboratory be subject to a royalty-free license for use by the United States for government purposes.

Subsection (c) requires the Secretary to establish procedures for the management of intellectual property rights by the director of the laboratory.

Subsection (d) requires the Secretary to prohibit the laboratory manager from benefiting from the licensing of intellectual property except in specific circumstances.

Subsection (e) requires the manager or operator of a national laboratory to pay compensation to the United States based on the value of intellectual property rights retained by the laboratory. The amount of payment would be set by arbitration as set forth in the subsection. Compensation would not be required if the contractor operating the laboratory receives no profit or fee beyond expenses and is offering the intellectual property for fair market

value with any value or royalties received to be returned to the laboratory or to the United States.

Section 135. March-in rights

This section authorizes the Secretary to require licensing in accordance with existing law to third parties of all intellectual property subject to this title and owned by the manager or operator of a national laboratory.

Secton 136. Oversight

This section provides for oversight of the activities of national laboratories under this Act.

Section 137. Copyrights and patents

This section states that the Act does not confer any new authority on the Department to obtain a copyright or a patent.

Section 138. Liability of the United States

This section provides that the United States shall not be liable for inventions covered by patents under this Act.

Section 139. Effective date

This section provides that the title take effect of the date of its enactment. The Secretary of Energy must enter into negotiations with the contractor at each national laboratory subject to the title to amend all existing contracts for operation of the laboratory to reflect the provisions of the title. Pending amendment of these contracts, the provisions of the title govern the disposition of all intellectual property rights generated in performance of the contracts.

COST AND BUDGETARY CONSIDERATIONS

The following estimate of the cost of this measure has been provided by the Congressional Budget Office.

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, July 25, 1989.

Hon. J. BENNETT JOHNSTON, Jr.,
Chairman, Committee on Energy and Natural Resources,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has reviewed S. 550, the Department of Energy National Laboratory Cooperative Research and Technology Competitiveness Act of 1989, as ordered reported by the Senate Committee on Energy and Natural Resources, July 19, 1989.

Based on information provided by the Department of Energy (DOE), CBO estimates that enacting S. 550 would have no significant effect on the federal budget because the activities required by this bill would be similar to ongoing activities at DOE.

S. 550 would require DOE to develop regulations that would authorize the national laboratories to enter cooperative research and development agreement with public and private organizations. This authority would allow the laboratories to negotiate terms for trans-

ferring to industry the commercial rights to innovations developed at the labs. The bill would also require DOE to establish centers for research on critical materials—such as high-temperature superconductors—and to develop a superconductor research initiative.

Enacting this bill would not affect the budgets of any state or local government.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Michael Sieverts, who can be reached at 226-2860.

Sincerely,

ROBERT D. REISCHAUER,
Director.

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of Rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact that would be incurred in carrying out S. 550.

The bill is not a regulatory measure in the sense of imposing Government-established standards or significant economic responsibilities on private individuals or businesses. The bill directs the Secretary of Energy to carry out a research and development initiative in high-temperature superconductivity. In addition, the relationship between the Secretary of Energy and the contractors operating the Department of Energy national laboratories would be modified in the interest of improving the transfer of technology developed at these laboratories. Any involvement of private firms and individuals in these research programs is voluntary.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy from the bill.

Little, if any, additional paperwork would result from the enactment of S. 550.

EXECUTIVE COMMUNICATIONS

On March 17, 1989, the Committee requested reports on S. 550 from the Departments of Defense and Energy and from the National Science Foundation, the Office of Science and Technology Policy, and the Office of Management and Budget. On June 28, 1989, the Committee received an unfavorable report on the bill from the Department of Justice. The pertinent reports and communications received by the Committee setting forth Executive agency recommendations relating to S. 550 are set forth below:

U.S. DEPARTMENT OF JUSTICE,
OFFICE OF LEGISLATIVE AFFAIRS,
Washington, DC, June 26, 1989.

Hon. J. BENNETT JOHNSTON,
Chairman, Committee on Energy and Natural Resources,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: This is to provide the views of the Department of Justice on S. 550, the Department of Energy National Laboratory Cooperative Research and Technology Competitiveness Act

of 1989. Because we find that there are serious shortcomings in section 308 of the bill, we do not recommend enactment of this bill unless it is amended as suggested below.

The overall purpose of the bill is to transfer technology from certain national laboratories to the private sector in order to promote the practical utilization of this technology. To this end, the bill provides that the intellectual property rights in this technology may be assigned or licensed to the private sector. These intellectual property rights may include patents and copyrights.

Section 308 of the bill is entitled "Liability of the United States" and purports to eliminate any liability "for a claim brought by any person alleging injury resulting from a product embodying intellectual property or from a product produced through the use of intellectual property acquired under this Act." This disclaimer "does not apply to such a product if the product is produced by the Federal Government or at the request of the Federal Government." The exact scope of this disclaimer is unclear, and the language used is confusing and does not conform to the language used in current statutes. For example, the type of "injury" intended to be excluded is vague, and the term "injury" could be construed to include personal injuries as well as infringements of intellectual property rights. The term "request" in the last sentence is also vague and could be construed to include exhortations as well as formal contracts.

To clarify and make certain the scope of this disclaimer, it is suggested that language conforming to the current statutes be employed. The following substitute language is suggested:

> Except as provided in Title 28, United States Code, section 1498, the United States shall not be liable for the use or manufacture of an invention covered by a patent acquired under this Act nor for the infringement of any copyright or certificate of plant variety protection acquired under this Act.

For the foregoing reasons, the Department of Justice recommends against enactment of the bill unless it is amended as suggested above.

The Office of Management and Budget has advised this Department that there is no objection to the submission of this report from the standpoint of the Administration's program.

Sincerely,

CAROL T. CRAWFORD,
Assistant Attorney General.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of Rule XXVI of the Standing Rules of the Senate, the Committee notes that no changes in existing law are made by the bill S. 550, as ordered reported.

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